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## IN THE CLAIMS

1. (currently amended) In a computer system, an improved multi-client to multi-server software system comprising:  
at least one server process ~~software application~~ capable of sending and receiving messages;  
at least one client process ~~software application to said server process software application~~ capable of sending and receiving messages; and  
a no more than one control process software module for passing said the messages to and from said the server process and the client process,  
where the server process, the client process, and the control process are all separate and distinct processes, and all messages between the server process and the client process are controlled by and relayed through the control process.
2. (currently amended) The ~~invention computer system~~ of claim 1, wherein: ~~said the~~ server process and ~~said the~~ client process send and receive messages only to and from ~~said the~~ control process ~~software module~~, and communication between ~~said the~~ server process and ~~said the~~ client process occurs under direction of ~~said the~~ control process, ~~said the~~ control process acts acting as a message broker between ~~said the~~ server process and ~~said the~~ client process.
3. (currently amended) The ~~computer system invention~~ of claim 2, wherein:  
~~said the~~ control process controls ~~the running of said the~~ server process and ~~said the~~ client process; and  
~~said the~~ control process sets synchronization points, ~~said the~~ synchronization points ~~comprising being~~ points in time where ~~said the~~ control process pauses the ~~running of said~~ server process.
4. (currently amended) The ~~computer system invention~~ of claim 3, further comprising:  
a plurality of server processes, and  
a plurality of client processes, and

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each of ~~said the plurality of~~ server processes communicating via ~~said the~~ control process with a predetermined number of ~~said the plurality of~~ client processes associated with each of ~~said the~~ server processes, with ~~said the~~ control process controlling ~~said the plurality of~~ server processes and client processes;

wherein ~~said the~~ control process stops ~~each of the running of said~~ server processes when each of ~~said the~~ server processes reaches a synchronization point, ~~said the~~ synchronization points ~~in time being measured as~~ elapsed time from the start of simulation by ~~said the~~ control process.

5. (currently amended) The computer system invention of claim 2, further comprising: a plurality of client processes associated with ~~said the~~ server process, each of ~~said the plurality of~~ client processes communicating via ~~said the~~ control process with ~~said the~~ server process, with ~~said the~~ control process controlling ~~said the~~ server process and ~~said the~~ client processes.
6. (currently amended) The computer system invention of claim 2, further comprising: a plurality of server processes; and a plurality of client processes, and each of ~~said the plurality of~~ server processes communicating via ~~said the~~ control process with a predetermined number of ~~said the plurality of~~ client processes associated with each of ~~said the~~ server processes, with ~~said the~~ control process controlling ~~said the plurality of~~ server processes and the client processes.
7. (currently amended) The computer system invention of claim 6, wherein: ~~said the~~ control process sets up a predetermined ordered queue of ~~said the~~ server processes and a predetermined ordered queue of ~~said the~~ client processes, and ~~said the~~ messages are sent to and from the client processes and the server processes according to ~~said the~~ predetermined ordered queues of server processes and client processes.
8. (currently amended) The computer system invention of claim 3, wherein: ~~said the~~ server process evaluates an ~~predetermined~~ event expression to determine the occurrence of an event in ~~said the~~ server process, and;

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~~at least one said the~~ server process sends an event expression message to ~~said the~~ control process upon the occurrence of ~~said the predetermined event expression in said the~~ server process, ~~said the~~ event expression message containing a time stamp, ~~said the~~ time stamp being an indication of ~~the a~~ time at which ~~said the~~ event occurred in ~~said the~~ server process.

9. (currently amended) The computer system invention of claim 8, further comprising: a plurality of server processes, and a plurality of client processes, and each of ~~said the plurality of~~ server processes communicating via ~~said the~~ control process with a predetermined number of ~~said the plurality of~~ client processes associated with each of ~~said the~~ server processes, with ~~said the~~ control process controlling ~~said the plurality of~~ server processes and the client processes.
10. (currently amended) The computer system invention of claim 9, wherein: ~~said the~~ control process maintains ~~said the~~ time stamp for each server process, ~~said the~~ time stamp being an indication of ~~the an elapsed time elapsed from the a~~ start of the control process, and where ~~said the elapsed time elapsed is~~ proportional to the a time elapsed in ~~said the~~ control process between ~~said the~~ synchronization points.
11. (currently amended) The computer system invention of claim 9, wherein: ~~said the~~ control process sets up a server order queue ~~comprising a predetermined ordered queue of said the~~ server processes and a client order queue ~~comprising a predetermined ordered queue of said the~~ client processes, and said the messages are sent to and from the client processes and the server processes according to a ~~predetermined ordered queue comprising said the~~ server order queue and ~~said the~~ client order queue.
12. (currently amended) The computer system invention of claim 11, wherein: ~~said the~~ control process receives a plurality of ~~said the~~ event expression messages from ~~said the~~ server processes, and said the control process sorts ~~said the~~ event expression messages received from ~~said the~~ server processes according to the server order queue; and

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- ~~said-the~~ control process ordering each of ~~said-the~~ event expression messages within ~~said-the~~ server order queue according to ~~the-an~~ earliest time-of ~~said~~ the time stamps at which ~~said-the~~ event occurred in ~~said-the~~ server process.
13. (currently amended) The computer system invention of claim 12~~1~~, wherein ~~said~~ the control process delivers ~~said-the~~ sorted event expression messages to ~~said-the~~ client processes associated with ~~said-the~~ server processes according to ~~said-the~~ predetermined-client ordered queue-of-client-processes.
14. (currently amended) The computer system invention of claim 5, wherein:  
each-of ~~said-the~~ plurality-of-client processes each sends a finish message, indicating ~~said-the~~ client process is finished running, to ~~said-the~~ control process for communication to ~~said-the~~ server process associated with ~~said~~ the client process, when each-of ~~said-the~~ client processes is finished running;<sub>2</sub>  
~~said-the~~ control process holds each of ~~said-the~~ finish messages from ~~said-the~~ plurality-of-client processes until all of ~~said-the~~ plurality-of-client processes associated with a server process are finished running;<sub>2</sub> and;  
wherein ~~said-the~~ control process sends a finish message to ~~said-the~~ server process indicating the client processes are finished running.
15. (currently amended) The computer system invention of claim 14, wherein:  
each-of ~~said-the~~ plurality-of-server processes each sends a finish message, indicating ~~said-the~~ server process is finished running, to ~~said-the~~ control process when ~~said-the~~ client processes associated with each of ~~said-the~~ server processes are finished;<sub>2</sub>  
~~said-the~~ control process holds each of ~~said-the~~ finish messages from ~~said-the~~ plurality-of-server processes until all of ~~said-the~~ plurality-of-server processes have sent ~~said-the~~ finish messages to ~~said-the~~ control process;<sub>2</sub>  
and  
wherein ~~said-the~~ server processes, client processes, and control process finish operations and exit.

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16. (currently amended) The computer system invention of claim 2, further comprising:  
a plurality of client processes, ~~said each of the plurality of~~ client processes associated with a predetermined server process, and communicating with ~~said the predetermined~~ server process under the direction of ~~said the~~ control process, and  
a plurality of server processes, each of ~~said the~~ server processes evaluating an event expression to determine the occurrence of an event in ~~said the~~ server process, and each of ~~said the~~ server processes sending an event expression message to ~~said the~~ control process upon the occurrence of ~~said the~~ event in ~~said the~~ server process, ~~said the~~ event expression message containing a time stamp indicating ~~the a~~ time at which ~~said the~~ event occurred in ~~said the~~ server process.
17. (currently amended) The computer system invention of claim 16, further comprising ~~said the~~ control process software module ~~set~~ settings up a plurality of ~~predetermined ordered queues comprising~~ a client ordered queue of client applications processes in a particular order, a server ordered queue of server applications processes in a particular order, and a time ordered queue of event expression messages received from ~~said the~~ plurality of server applications processes, ~~said the~~ time ordered queue ordered according to ~~the an~~ earliest in time event expression message.
18. (currently amended) The computer system invention of claim 16, wherein ~~said the~~ control process software module resides within ~~said a~~ common hardware platform with one of the server processes application, in the code comprising ~~said server process application~~.
19. (currently amended) A server-client computer simulation system comprising:  
a computer ~~comprising including~~ a processor, ~~primary and secondary~~ memory, and means for I/O;

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at least one server ~~comprising including~~ a processor, ~~primary and secondary~~ memory, means for I/O, and a server ~~application process~~ residing in said ~~the~~ memory and operating ~~said on the~~ processor;

at least one client ~~comprising including~~ a processor, ~~primary and secondary~~ memory, means for I/O, and a client ~~application process~~ residing in said ~~the~~ memory and operating ~~said on the~~ processor; and

a ~~single~~ control process ~~software module~~ residing in ~~said the~~ computer memory, ~~said the~~ control process ~~software module~~ acting as a message broker between ~~said the~~ server ~~application process~~ and ~~said the~~ client ~~application process~~, for passing messages between ~~said the~~ server ~~application process~~ and ~~said the~~ client ~~application process~~, and ~~with~~ communication between ~~said the~~ server ~~application process~~ and ~~said the~~ client ~~application process~~ controlled and directed exclusively by ~~said the~~ control process ~~software module~~, ~~said the~~ server-client computer simulation system acting to simulate a device in a repeatable manner.

20. (currently amended) The server-client computer simulation system ~~invention of~~ claim 19, wherein ~~said the~~ device simulated is a ~~device~~ selected from ~~the a~~ group consisting of electrical devices, mechanical devices, electromechanical devices, computer networks, DSL modems, ASICs disk drive controllers, graphics processors, network interface adapters, and communications networks.
21. (currently amended) The server-client computer simulation system ~~invention of~~ claim 19, wherein ~~said the~~ control process ~~software module~~ controls ~~said the~~ server ~~application process~~ and ~~said the~~ client ~~application process~~, and ~~said the~~ control process sets synchronization points for ~~said the~~ server ~~application process~~, which synchronization points are comprising points in time where ~~said the~~ control process ~~software module~~ pauses the running of ~~said server application process~~.
22. (currently amended) The server-client computer simulation system ~~invention of~~ claim 21, wherein ~~said the~~ control process ~~software module~~ ~~comprises includes~~ a

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synchronization varying ~~software-module~~ for varying ~~the~~ an elapsed time duration between ~~said-the~~ synchronization points.

23. (currently amended) The server-client computer simulation system invention of claim 21, wherein ~~:-said-the~~ control process stops ~~all-of-said-the~~ servers process ~~upon-when said-the~~ servers process ~~reachesing~~ a synchronization point.
24. (currently amended) The server-client computer simulation system invention of claim 19, further comprising ~~:-a~~ plurality of client applications~~processes~~, ~~said-the~~ ~~plurality-of-client~~ applications~~processes~~ associated with ~~said-the~~ server application ~~process~~, and communicating with ~~said-the~~ server application~~process~~ under the direction of ~~said-the~~ control process ~~software-module~~.
25. (currently amended) The server-client computer simulation system invention of claim 24, ~~wherein~~ further comprising ~~:-a~~ plurality of servers applications ~~processes~~, ~~said-the~~ ~~plurality-of-server~~ applications~~processes~~ communicating via ~~said-the~~ control process ~~software-module~~ with a predetermined number of ~~said-the~~ ~~plurality-of-client~~ processes ~~applications~~ associated with each of ~~said-the~~ server applications ~~processes~~.
26. (currently amended) The server-client computer simulation system invention of claim 25, wherein ~~:-said-the~~ control process ~~software-module~~ sets up a plurality of ~~predetermined ordered queues comprising a client ordered queue of client applications-processes and a server ordered queue of server applications processes.~~
27. (currently amended) The server-client computer simulation system invention of claim 21, wherein:  
a plurality of server applications ~~processes~~, a plurality of client applications ~~processes~~ associated with ~~said-the~~ server applications ~~processes~~, ~~said-the~~ plurality of server applications ~~processes~~ communicating via ~~said-the~~ control process ~~software-module~~ with ~~said-predetermined-number-of~~ ~~said~~

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~~the plurality of client applications processes~~ associated with each of said ~~the server applications processes~~;

wherein, ~~each of said the server applications processes~~ evaluates an event expression to determine the occurrence of an event in said ~~the server application process~~, and each of said ~~the server applications processes~~ sends an event expression message to said ~~the control process software module~~ upon the occurrence of said ~~the event~~ in said ~~the server application process~~, said ~~the event~~ expression message containing a time stamp indicating ~~the a time~~ at which said ~~the event~~ occurred in said ~~the server process~~.

28. (currently amended) The server-client computer simulation system ~~invention of claim 27, wherein said the control process software module sets up of a plurality of predetermined ordered queues comprising a client ordered queue of client processes applications in a particular order, a server ordered queue of server processes applications in a particular order, and a time ordered queue of event expression messages received from said the plurality of server applications processes, said the time ordered queue ordered according to the an earliest in time event expression message, and said the control process software module passing messages to and from said the server processes and said the client processes applications according to at least one of said the predetermined client ordered queues and the server ordered queue.~~
29. (currently amended) A method of carrying out a simulation employing of multiple clients and multiple servers, the method comprising the steps of:  
 running a plurality of server processes ~~software applications that each simulate a server application~~;  
 running a plurality of client processes ~~software applications that each simulate a client application, each of said the client applications processes associated with at least one of said the server applications processes~~;  
 running a single control process software application that acts as a message broker between said the server processes and the client processes, all messages



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between the server processes and the client processes managed and controlled by ~~said-the~~ control process, and ~~said-the~~ control process controlling the operation of ~~said-the~~ server processes; and maintaining ~~the-an~~ elapsed time of ~~said-the~~ simulation in-with ~~said-the~~ control process ~~software application~~.

30. (currently amended) The ~~invention-method~~ of claim 29, further comprising the steps of:

determining the occurrence of ~~a-predetermined~~ events in ~~said-the~~ server applicationsprocesses;

maintaining; ~~in-with~~ said-the control process; a list of client applications processes, a list of ~~and-server processes~~ applications, and a list of messages ~~for-associated with the occurrence of said-predetermined events that occur in-said-server applications~~; and

communicating the associated message ~~said-predetermined events from said server applications to said-the client processes~~ applications upon occurrence of one of the predetermined events.

31. (currently amended) The ~~invention-method~~ of claim 30, further comprising the steps of:

ordering ~~in~~ said-with the control process; ~~said-the~~ messages of said predetermined events according to the-an earliest time that such-the predetermined events occurred in said-the server processes applications; and

delivering ~~said-the~~ messages to said-the client processes applications according to said-the ordering of said-predetermined events.

32. (currently amended) The ~~invention-method~~ of claim 31, wherein: ~~the ordering, in said-control process, said- of the list of messages for the occurrence of said predetermined events according to~~ is determined by at least one of:

(1) time order, ~~the-by~~ an earliest time that such predetermined events occurred in said-the server processes applications,

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- (2) server order, ~~an ordering~~ according to a predetermined ~~queue order~~ of server processes, and;
- (3) client order, ~~an ordering~~ according to a predetermined ~~queue order~~ of clients.
33. (currently amended) The ~~invention method~~ of claim 32, ~~wherein further comprising the steps of:~~  
sorting ~~said the list of~~ messages of ~~said predetermined events~~ according to ~~said~~ the server order and said the time order; and  
delivering, ~~using said control process,~~ ~~said the~~ messages of ~~said predetermined events~~ from ~~said the control process~~ to ~~said the plurality of client processes~~ applications according to ~~said the client order and said the time order~~, with ~~the~~ earliest messages delivered first.
34. (currently amended) The ~~invention method~~ of claim 29, further comprising the steps of:  
setting a plurality of synchronization points ~~comprising of~~ elapsed time in the simulation of servers and clients; and  
stopping ~~said the server processes~~ upon each of ~~said the server processes~~ reaching ~~said the~~ synchronization points.
35. (currently amended) The ~~invention method~~ of claim 34, further comprising the steps of: ~~varying the duration of elapsed time between said the synchronization points by way of said the control process setting the duration of time to elapse between synchronization points.~~
36. (currently amended) The ~~invention method~~ of claim 29, further comprising the steps of:  
setting a plurality of synchronization points ~~comprising of~~ elapsed time in the simulation of servers and clients;  
determining ~~the an~~ occurrence of a predetermined event in ~~said the server processes~~ applications;  
maintaining, ~~in with said the control process,~~ a list of client processes, ~~applications a list of and server processes~~ applications, and a list of ~~the~~

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occurrences of ~~said the~~ predetermined events ~~that occur in said server applications;~~

communicating ~~said the~~ predetermined events ~~from said server applications to said the client processes~~ ~~applications;~~

ordering, ~~in with said the~~ control process, ~~said the~~ predetermined events according to ~~the an~~ earliest time that ~~such the~~ predetermined events occurred in ~~said the server processes~~ ~~applications;~~ and,

delivering messages to ~~said the~~ client ~~processes~~ ~~applications~~ relating to ~~said the~~ predetermined events according to ~~said the~~ ordering of ~~said the~~ predetermined events.

37. (currently amended) The ~~invention method~~ of claim 36, further comprising the steps of:

determining through ~~said the~~ control process whether ~~said the~~ client ~~processes~~ ~~applications~~ are finished with ~~said the~~ simulation through ~~the an~~ occurrence of a ~~client process finish~~ message indicating ~~that said the~~ client ~~processes~~ ~~applications~~ are finished;

determining through ~~said the~~ control process whether ~~said the~~ server ~~processes~~ ~~applications~~ are finished with ~~said the~~ simulation through the occurrence of a ~~server process finish~~ message indicating ~~that said the~~ server ~~processes~~ ~~applications~~ are finished;

~~said acknowledging with the~~ control process ~~acknowledging said when the~~ client ~~process finish messages~~ and ~~the server process application~~ finish messages ~~have been received~~, and

~~said terminating the~~ simulation ~~terminating when said the~~ client ~~processes~~ and ~~the~~ server ~~processes~~ ~~applications~~ have all finished.

38. (currently amended) The ~~invention method~~ of claim 29, further comprising the steps of:

polling each of ~~said the plurality of~~ client ~~processes~~ ~~software~~ ~~applications~~ with ~~said the~~ control process ~~software~~ ~~application~~ in a predetermined manner;

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temporarily storing ~~said the~~ messages from ~~said the~~ client processes ~~software~~ applications, until such time that ~~said the~~ client processes ~~software~~ applications issue a predetermined message to simulate to ~~said the~~ control process, and

forwarding ~~said the~~ messages from ~~said the~~ client processes ~~software~~ applications to ~~said the~~ server processes ~~software~~ applications associated with ~~said the~~ client processes ~~software~~ applications upon the occurrence of ~~said the~~ predetermined message to simulate.

~~A simulator apparatus comprising:~~

~~means for sending and receiving messages in a computer system, said means for sending and receiving messages acting as a server;~~

~~means for sending and receiving messages in a computer system, said means for sending and receiving messages acting as a client;~~

~~means for sending and receiving messages server means and said client means, said means for sending and receiving messages acting as a message broker between said server means and said client means, and said means for sending and receiving messages able to stop the running of said server means and said client means at predetermined points in time comprising synchronization points; wherein,~~

~~said server means, said client means and said message broker means act as a simulator performing a repeatable simulation.~~

39. (new) A simulator apparatus comprising:

at least one first means for sending and receiving messages in a computer system, the first means for sending and receiving messages acting as a server process,

at least one second means for sending and receiving messages in a computer system, the second means for sending and receiving messages acting as a client process, and

a single third means for sending and receiving messages between the server process and the client process, the third means for sending and receiving messages acting as a message broker between the server process and the

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client process, and the third means for sending and receiving messages adapted to stop the server process and the client process at predetermined points in time that are designated as synchronization points, wherein the server process, the client process, and the message broker are all separate and distinct processes, and all messages between the server process and the client process are controlled by and relayed through the message broker, wherein the server process, the client process and the message broker act as a simulator performing a repeatable simulation.

40. (currently amended) The apparatus according to claim 39, wherein:  
~~said the server process means~~ evaluates a predetermined event expression to determine the occurrence of an event in ~~said the server process means~~, and;  
~~said the server process means~~ sends a event expression message to ~~said the~~ message broker ~~means~~ upon the occurrence of ~~said the predetermined event expression in said the server process means~~, ~~said the event expression message containing a time stamp, said the time stamp an indication of the a time at which said the event occurred in said the server process means~~;  
and further including a plurality of ~~said the server processes means~~ and ~~said a plurality of the client processes means~~, wherein ~~said the message broker means~~ delivers ~~said the event expression messages between said the server processes means~~ and ~~said the client processes means~~ according to a predetermined queue.

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